

the reactor being configured so that hydrocarbon feed stock is preheated in a second gap and fuel for a burner is preheated in a third gap.

78. (New) The reactor of claim 77 including that the reactor being further configured so water/steam is preheated in a fourth zone.

79. (New) The reactor of claim 78 including that the reactor being further configured so that water/steam is preheated along with the hydrocarbon feed stock in the second zone.

80. (New) A reactor for generating a hydrogen-enriched reformat from hydrocarbons comprising:

a plurality of nested shells having walls arranged coaxially and defining a gap between each of the successive shells forming a plurality of coaxial zones, the shells being configured to permit heat transfer from one zone to another;

wherein a first zone contains a catalyst selected from the group including a steam reforming catalyst and a shift catalyst; and

the reactor being configured so that a hydrocarbon feed stock is preheated in a second zone, and fuel for a burner is preheated in a third zone.

REMARKS

Claims 1, 2, 4, 5, 16, 40, 41, 43, 54 have been amended. Claims 61-80 have been added. No new matter has been added to the application by these amendments.

It is respectfully submitted that the currently pending claims are believed to be in condition for allowance. Notice to this effect at the examiner's earliest convenience is earnestly sought. A check in the amount of \$624.00 is enclosed for the new claims. The Commissioner is authorized to charge any additional fees associated with this Amendment to Deposit Account No. 23-0280.

Attorney Docket No. 1955 P 066
Application No.: 09/870,412
Page 6

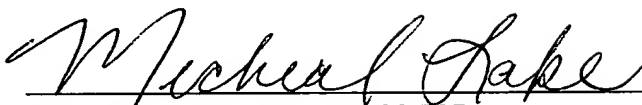
Please direct all future correspondence to:

Micheal D. Lake, Reg. No. 33,727
Wallenstein & Wagner, Ltd.
311 South Wacker Drive, 53rd Floor
Chicago, Illinois 60606-6622
312.554.3300

Respectfully submitted,

Date:

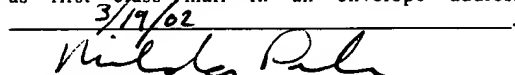
3/19/02



Micheal D. Lake, Reg. No. 33,727
Wallenstein & Wagner, Ltd.
311 South Wacker Drive, 53rd Floor
Chicago, Illinois 60606-6622
312.554.3300

CERTIFICATE OF MAILING (37 C.F.R. § 1.8a)

I hereby certify that this correspondence is, on the date shown below, being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, Washington, D.C. 20231 on

3/19/02


Nicholas C. Pruhs/135279.1



MARKED UP CLAIMS

1. (Once Amended) A method for increasing the efficiency of a system comprising a fuel reformer coupled to a fuel cell, the method comprising the steps of:
providing pressurized air;
using heat generated by the fuel cell to make a pressurized air/steam mixture, optionally in admixture with water, by direct evaporation of cooling water from the fuel cell into pressurized air;
[injecting] introducing the air/steam mixture as an oxidant into a fuel burner;
producing a steam-containing exhaust having an expansion potential from the fuel burner;
driving an expander using the expansion potential of the steam-containing exhaust; and
recovering mechanical energy from the expander.
2. (Once Amended) The method of Claim 1, further comprising the step of preheating the air/steam mixture in the steam-containing exhaust of the fuel burner before [injection] introduction into the burner.
4. (Once Amended) The method of Claim 1, further comprising the step of [injecting] introducing additional water into the air/steam mixture.
5. (Once Amended) The method of Claim 4, wherein the step of [injecting] introducing additional water occurs after the mixture has emerged from the fuel cell.
16. (Once Amended) The method of Claim 15, further comprising the step of removing water from the air/steam mixture at a selected point in the path before [injection] introduction of the mixture into the burner.
40. (Once Amended) The method of Claim 28, further comprising the step of [injecting] introducing additional water into the air/steam mixture.
41. (Once Amended) The method of Claim 40, wherein the step of [injecting] introducing additional water occurs after the mixture has emerged from the fuel cell.
43. (Once Amended) The method of Claim 42, further comprising the step of removing water from the air/steam mixture at a selected point in the path before [injection] introduction of the mixture into the burner.

Attorney Docket No. 1955 P 066
Application No.: 09/870,412
Page 8

54. (Once Amended) The system of Claim 45, wherein the air/steam mixture further comprises water in at least a part of a path between the fuel cell and a point of [injection] introduction into the burner.